

The diaphragms are made in halves with horizontal joints, the two halves being joined with bronze keys. The top halves are held in the turbine cover with locking screws.

Labyrinth glands are used on the diaphragms between their centres and the shaft. These are made of soft copper strips of knife-edge section fitting into parallel grooves so that the knife edges point inwards and practically touch the shaft. These are shown in fig. 25, and in the case of touching the soft copper is merely pressed into a running fit on the shaft.

The shaft is made from a solid steel forging annealed and reannealed between the varying stages of manufacture. It is finally ground to gauge.

The discs or wheels are solid steel forgings, and are repeatedly annealed during machining.

The surfaces are polished to reduce frictional losses.

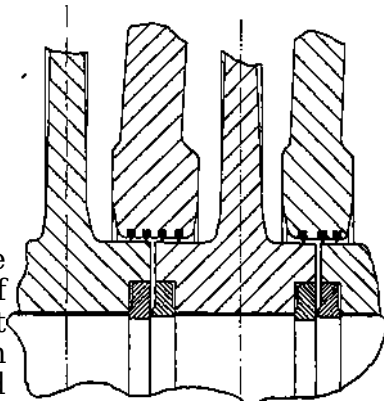
The discs are profile section, and are mounted on the shaft with support-

ing rings for which the shaft is grooved. The discs and rings are then keyed into position.

Fig. 25 shows clearly the method of fixing. The wheel does not actually touch the shaft, and can be mounted and dis-mounted regularly; moreover, there is no danger of damage to shaft surfaces in dismantling. The points of support are at the outer edges of the hub, and the centre of the disc, where the maximum stretching due to rotation occurs, is not in contact with the shaft or supporting ring. When rotating at high speed the Diaphragm stretches and wheel stretch at the centre tends to close the outer edge of the hub, producing a tighter fixing and not tending to loosen the disc on the shaft when fully stressed.

The discs with their blading are balanced singly before erection, and the rotor complete with all discs is balanced finally.

The moving blades are made from nickel-steel bars, machined to gauge size, and the surface polished.



The blade roots of T section fit into corresponding grooves in the peripheries of the wheels. The blades are inserted through windows which are afterwards closed by special wedge-section locking pieces. The full width is given at the blade root.

The spacing of the blades is effected by spacing pieces which are generally an integral part of the blades, but occasionally made separately.

The shrouding is a steel strip, and is fixed by machined tangs on each blade end. The tangs fit into rectangular holes in the shrouding and are riveted over.

The longer blades in the low-pressure end taper to the tips.

The glands at both high- and low-pressure ends of the turbine are of the